

Nutrient Management: Issues Observed

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WDNR Nutrient Management Program Coordinator

Green Bay & New London: January 31, 2017

Manitowoc & Fond du Lac: February 1, 2017

Jefferson: February 6, 2017

Dodgeville: February 7, 2017

Marshfield: February 8, 2017

Rice Lake: February 9, 2017



Outline

- 5-Year Nutrient Management Plan
- Annual NMP Update
- Potential Future NMP Changes
- Hauling Audits



Photo by Baeten, WDNR



5-Year NMP

- NMP required at WPDES permit issuance/reissuance.
- DNR reviews plans for compliance with NR 243.
- The approved NMP should be a tool that CAFOs can use to maintain compliance with their WPDES permit.
- Here are some issues we are seeing with our reviews...



5-Year NMP

- Checklists (3400-025B & 590)
 - Make sure the most current version is being used.
 - Most current forms, checklists, and templates are on the NM Planning webpage
<http://dnr.wi.gov/topic/AgBusiness/CAFO/NutrientManagementPlan.html>
 - Are spreadable acres being calculated?
 - SnapPlus now does this.
 - Is the form signed?



5-Year NMP

- Narrative
 - Should address the requirements in Form 3400-025B
 - Template available
 - Do animal units and manure generation volumes match preliminary application, engineering documents, etc.?
 - When using phosphorus management strategies Soil Test P & PI clarify which fields will follow which strategy.

5-Year NMP

- Narrative
 - Are 180 day storage calculations included in the plan?

Liquid Waste Storage Volume Calculation Worksheet

		Client:	Dsn by:		Date:	01/05/2017	
Total Annual Liquid Waste Generation		Total Liquid Waste Storage Capacity (gallons)					
Liquids Collected/Stored	Annual Gallons	Waste Storage	Total Vol. from Settled Top to Bottom	-Solids Storage	-25-yr, 24-hr Precip. on Storage	-Freeboard Vol.	Max. Operating Level (MOL) Vol.
Manure and Bedding		#1					0
Parlor Wastewater		#2					0
Feed Storage Leachate		#3					0
Feed Storage Runoff Collected *		#4					0
Feedlot Runoff		#5					0
Net Precipitation on Storage Surface(s) **		#6					0
Offsite Wastes		Total MOL Vol:					0
Other		Days of Storage:					#DIV/0!
Other		Meets Days of Storage Criteria:					#DIV/0!
Other							
Other							
Other							
TOTAL:	0						

5-Year NMP

• Maps

1. Non Winter Spreading Maps

- All fields

2. Winter Spreading Maps

- Only selected fields

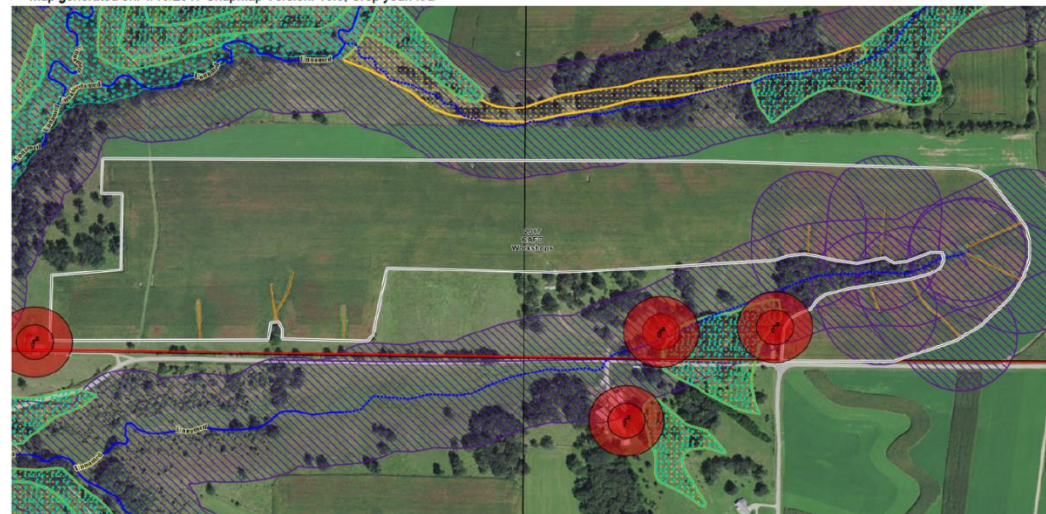
3. Headland Stacking Maps

4. Manure Irrigation Maps

2017 CAFO Workshops

Farm Name: CAFOWorkshop2017
Is this a CAFO: True

Map generated on: 1/10/2017 SnapMap Version: 16.0, Crop year: n/a



Non Winter Spreading Map Example



5-Year NMP

- Spreading Maps (non-winter & winter)
 - If tile is identified in SnapPlus the outlets and inlets should also be identified on the restriction maps.
 - Areas of concentrated flow should be identified on the maps.
 - If directly connected to a navigable water they would be subject to a SWQMA.
 - Road ditches are considered areas of concentrated flow and may be conduits to navigable water.



5-Year NMP

- Spreading Maps (non-winter & winter)
 - Make sure all fields in the NMP have a non-winter spreading map.
 - Don't print PDF maps until after department review; send database and we can review online.
 - There should be a separate map for non-winter and winter spreading.
 - Only need a winter spreading map for those fields selected for winter spreading.
 - Must select at least 2 fields for emergency applications of liquid manure.
 - DNR recommends selecting more than 2 fields.

5-Year NMP

- Headland Stacking Maps
 - Only required if the farm intends to headland stack manure.
 - Must clearly identify where the headland stack will be placed on the field(s).



Photo by Baeten, WDNR



5-Year NMP

- SnapPlus & Reports
 - Prefer the SnapPlus database & shapefile
 - At a minimum the following reports:
 - Compliance Check Report
 - Field Data & 590 Assessment Report
 - DNR CAFO Mass Balance Report (length of plan)
 - DNR CAFO Annual Spreading Report (length of plan)
 - Annual Manure Production Report (each year of expansion)
 - Annual PI Report (length of plan)
 - Crops Trends Production Report (length of plan)
 - Soil Test Summary Report (short version with past samples)

Annual NMP Updates

- Annual NMP Update typically due at the end of March.
- Should include updates to prior year as well as any necessary to the upcoming year.
- Department review of annual NMP updates is anticipated to be more frequent.

2017

January	February	March	April
S M T W Th F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	S M T W Th F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	S M T W Th F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	S M T W Th F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
May	June	July	August
S M T W Th F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	S M T W Th F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	S M T W Th F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	S M T W Th F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
September	October	November	December
S M T W Th F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	S M T W Th F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	S M T W Th F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	S M T W Th F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31



Annual NMP Updates

- Annual NMP Update is an updated version of the approved 5-year NMP.
 - 3 checklists
 - 3400-025B, 3400-025D, & 590 checklists
- SnapPlus & Reports
 - Planning values should be replaced with actual values.
 - Ex. 15,000 vs 14,689 gallons/acre
 - Are calibrations being done?
 - No flags in the Compliance Check Report may be concerning.



Annual NMP Updates

- SnapPlus & Reports

- A CAFO is responsible for obtaining land application records for all fields in their NMP.
 - Owned land, rented land, land under manure agreements, etc.
- Soil tests must be kept up to date for all fields.
- These are common issues with land under manure agreements.
 - I.e. the CAFO doesn't have control over the land.
 - If records can't be obtained or soil tests aren't kept up to date the field would be non-compliant.

Note: update gvsp files to SnapMaps or equivalent.

Annual NMP Updates

- Field monitoring requirements:
 - Drain tile monitoring
 - Before, during and after application
 - Field verification monitoring
 - Before application; are there any new features? Soil conditions?
 - 'W' & 'R' soil verification'
 - Before application
 - Drift monitoring (irrigation)
 - During application



Photo by Baeten, WDNR



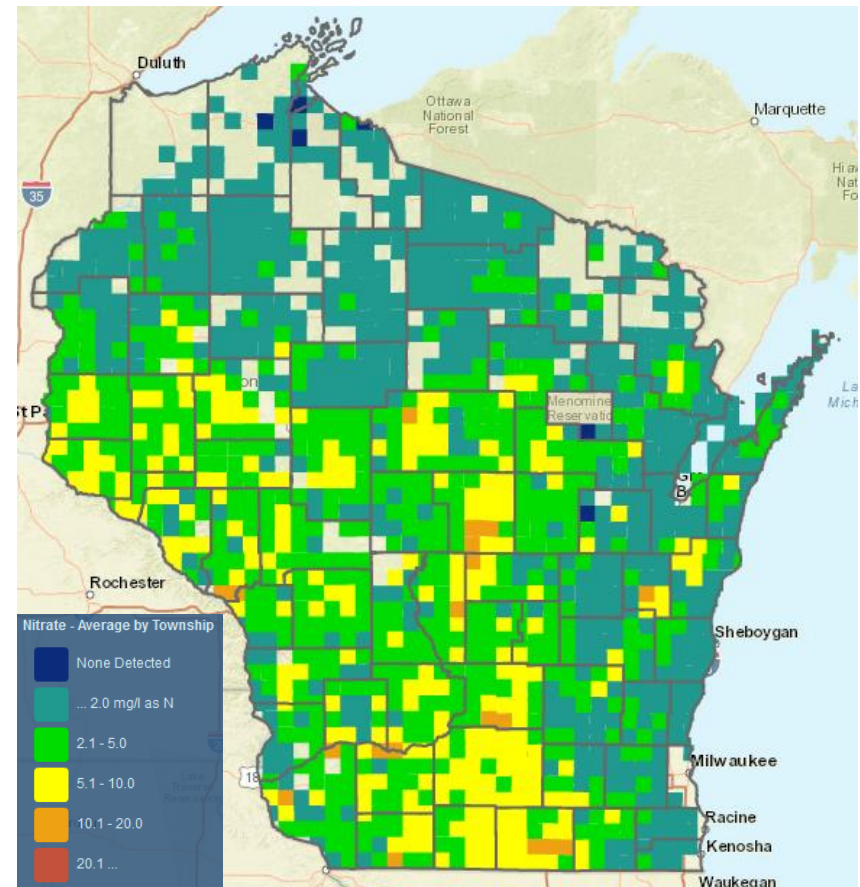
Potential Future NMP Changes

- Mortality Management.
- Documentation of weather conditions 24 hours prior and after application.
- Maps showing the locations of each soil sample.
- Total and spreadable field acres must be used.
- Actual crop yields.

Hauling Audits

Why the audits?

- Many areas of the state have groundwater and surface water quality issues.
- Helps reinforce the WPDES permit.
- Demonstrate compliance or non compliance and improves implementation of the NMP.



<http://www.uwsp.edu/cnr-ap/watershed/Pages/WellWaterViewer.aspx>



Hauling Audits

- Types of hauling audits include:
 - Complaint/Spill Response
 - Announced
 - Unannounced
- Hauling audits can be done during any season.
- Hauling audit methodology:
 - Manure hauling inspection form.
 - Use available tools to do infield measurements: GPS, measuring wheel, clinometer, soil probe, camera/tablet, soil & manure sampling, etc.
 - Compare field audit to most current version of NMP on file.

Hauling Audits

- Issues Observed
 - Tile inlets/outlets not on maps.
 - 67%
 - NMP Sub. Revision



Photos by Baeten, WDNR

Hauling Audits

- Issues Observed

- Manure applied within 25 ft of wetland.
- Manure surface applied within 100 ft of navigable water.
- Manure applied within 100 ft of private well.

Non Compliant

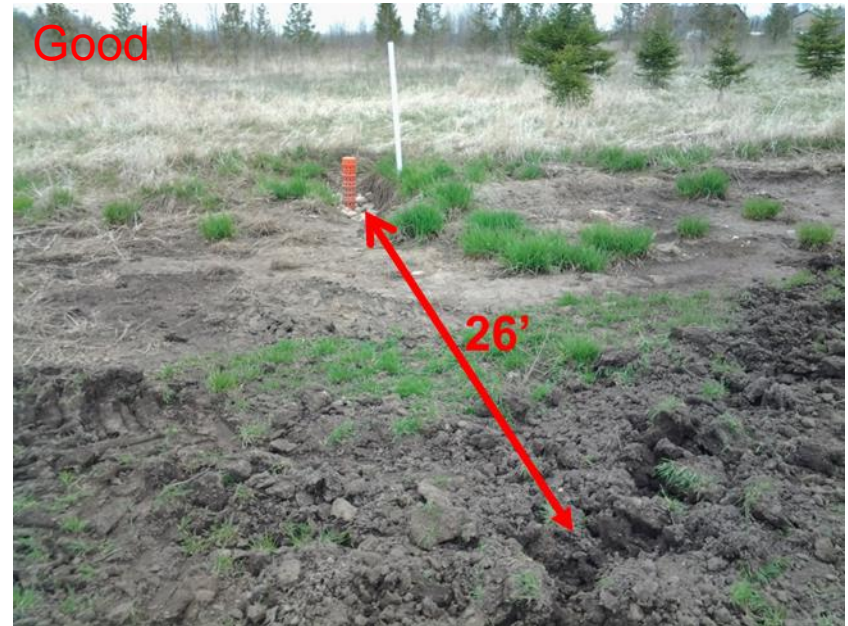


Non Compliant

Hauling Audits

- Issues Observed

- Manure applied within 25 ft of wetland.
- Manure surface applied within 100 ft of navigable water.
- Manure applied within 100 ft of private well.



Photos by Baeten, WDNR



WETLAND



Hauling Audits

- Issues Observed

- NMP does not match what's observed in the field (cropping, restrictions).
- Field(s) found in multiple CAFO NMPs.
 - Not allowed
 - Can go through manure distribution process
 - Need department approval if farm's transfer liability
- Restriction maps not on site during inspection.
- Field verification requirements are not being performed prior to, during, or after spreading.

Hauling Audits

- Issues Observed
 - Areas of concentrated flow not established in perennial vegetation.



Hauling Audits

- **Be Alert & Proactive
Hose Leak**
 - What's your procedure?
 - How do you monitor?



Photos by Baeten, WDNR

Hauling Audits

- Be Alert & Proactive
Mud on the Road
 - What's your policy?



Photo by Baeten, WDNR

Hauling Audits

- Be Alert & Proactive
Perimeter tillage pass
 - Provides a barrier.
 - Helps meet setbacks.

Photos by Baeten, WDNR





Hauling Audits

- Be Alert & Proactive
Perimeter tillage pass
 - Provides a barrier.
 - Helps meet setbacks.



Hauling Audits

- Audits can be simple.
 - Farm is prepared and adequately implements NMP.

W SOIL INSPECTION LOG

Field	Holes Dug	Date	Soil Temp	Cover Crop	Notes	Action Taken
Ogden	1	10-15	40°F	N2		
Ogden	4	10-15	50°F	N2		
C-1	1	10-16	50°F	N2		
C-2	2	10-16	50°F	N2		
D-25	1	10-16	50°F	N2		
V70-6	1	10-17	50°F	N2		
B-1	1	10-17	50°F	N2		
B-2	1	10-17	50°F	N2		
B-3	1	10-17	50°F	N2		
B-4	1	10-17	50°F	N2		
B-5	1	10-17	50°F	N2		
B-6	1	10-17	50°F	N2		
B-7	1	10-17	50°F	N2		
B-8	1	10-17	50°F	N2		
B-9	1	10-17	50°F	N2		
B-10	1	10-17	50°F	N2		
B-11	1	10-17	50°F	N2		
B-12	1	10-17	50°F	N2		
B-13	1	10-17	50°F	N2		
B-14	1	10-17	50°F	N2		
B-15	1	10-17	50°F	N2		
B-16	1	10-17	50°F	N2		
B-17	1	10-17	50°F	N2		
B-18	1	10-17	50°F	N2		
B-19	1	10-17	50°F	N2		
B-20	1	10-17	50°F	N2		
B-21	1	10-17	50°F	N2		
B-22	1	10-17	50°F	N2		
B-23	1	10-17	50°F	N2		
B-24	1	10-17	50°F	N2		
B-25	1	10-17	50°F	N2		
B-26	1	10-17	50°F	N2		
B-27	1	10-17	50°F	N2		
B-28	1	10-17	50°F	N2		
B-29	1	10-17	50°F	N2		
B-30	1	10-17	50°F	N2		
B-31	1	10-17	50°F	N2		
B-32	1	10-17	50°F	N2		
B-33	1	10-17	50°F	N2		
B-34	1	10-17	50°F	N2		
B-35	1	10-17	50°F	N2		
B-36	1	10-17	50°F	N2		
B-37	1	10-17	50°F	N2		
B-38	1	10-17	50°F	N2		
B-39	1	10-17	50°F	N2		
B-40	1	10-17	50°F	N2		
B-41	1	10-17	50°F	N2		
B-42	1	10-17	50°F	N2		
B-43	1	10-17	50°F	N2		
B-44	1	10-17	50°F	N2		
B-45	1	10-17	50°F	N2		
B-46	1	10-17	50°F	N2		
B-47	1	10-17	50°F	N2		
B-48	1	10-17	50°F	N2		
B-49	1	10-17	50°F	N2		
B-50	1	10-17	50°F	N2		

Maintained inspection log

- Pre-tillage
- Immediate Incorporation
- Manure mixed well with soil
- Met setbacks to wetlands & wells



Photos by Baeten, WDNR

Hauling Audits

Photo by Jones, WDNR

- Audits can be complicated.
 - Farm is not prepared and distracted by other work.



Photo by Baeten, WDNR



- Manure applied to saturated soils
- High application rate
- No monitoring of field was done
- Manure ran off field in multiple areas

Hauling Audits

- Audits can be complicated.
 - Farm is not prepared and distracted by other work.



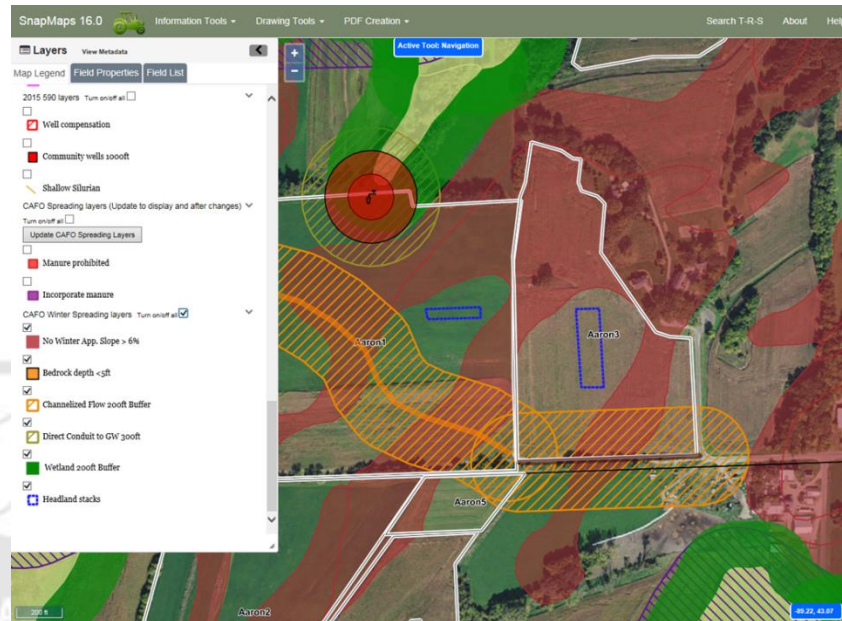


Hauling Audits

- 2017 and beyond...
 - Increased presence in the field by DNR staff conducting hauling audits.
 - EPA also interested in conducting manure hauling audits.

CAFO SnapPlus Updates

- Updates to SnapMaps
 - Winter Spreading maps:
 - Checkbox that will add restrictions to CAFO for winter spreading
 - 300ft buffer on wells and other direct conduits to GW
 - 200ft buffer on concentrated flow channels
 - 200ft buffer on wetlands
 - Bedrock <5ft
 - Slope >6%



CAFO

Farm Name: Aarons_Farm

Is this a CAFO: True

Map generated on: 1/23/2017 SnapMap Version: 16.0, Crop year: 2017



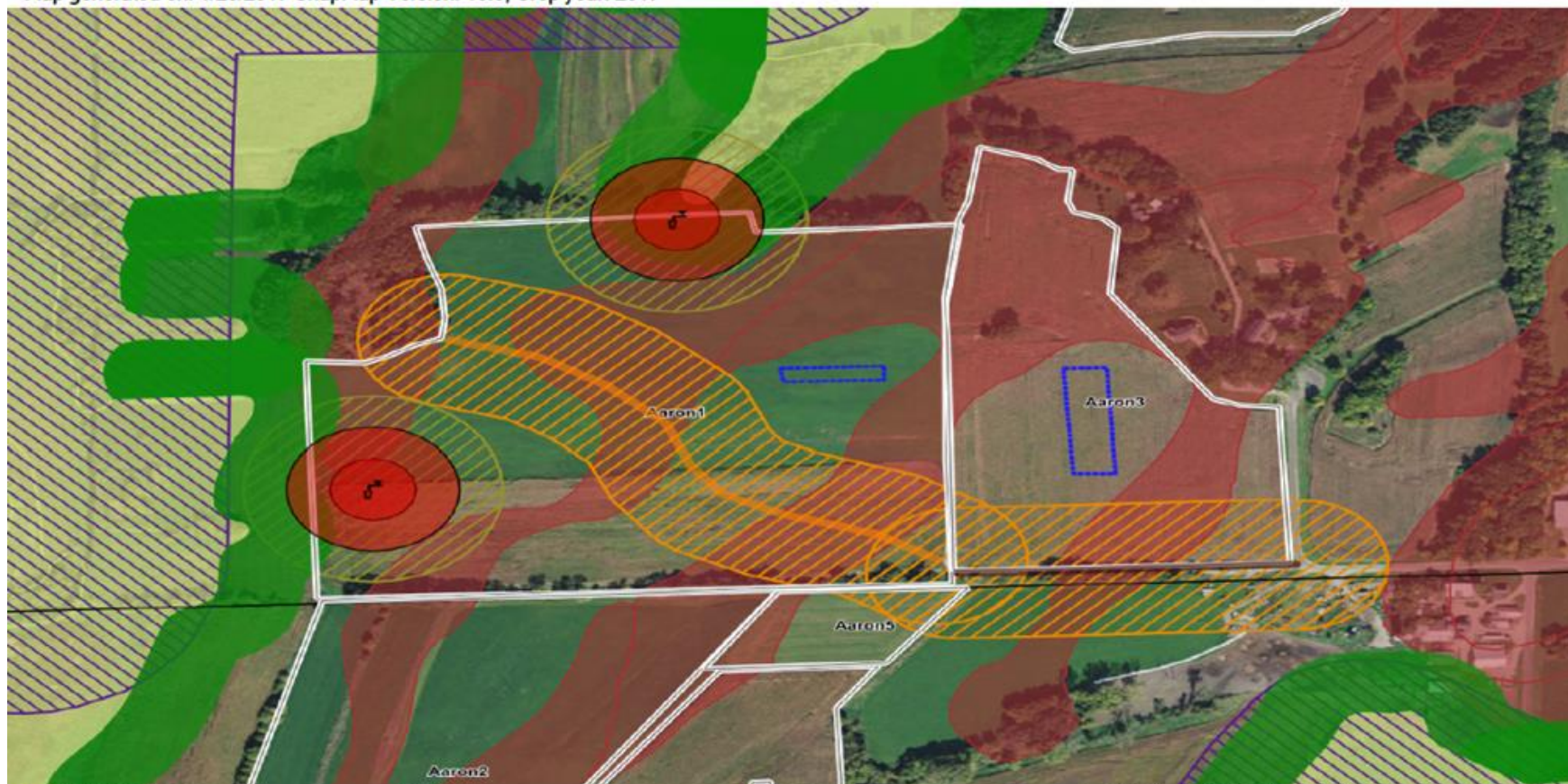
- | | | |
|------------------------------|-------------------------------|-------------------------------|
| DNR Wetland | Other | Non-metallic mine |
| CAFO SWQMA 300FT | Designed grassed waterway | Fractured bedrock at surface |
| Counties | Permanent vegetated channel | Other direct conduit |
| Township/Range | Unvegetated ephemeral channel | Tile outlet |
| Fields | Drainage ditch | Tile inlet |
| Tile lines | Gully | County Defined Karst Features |
| Not farmed | Point buffers | |
| Grass filter area | Drinking Well | |
| Vegetated buffer | Well | |
| Water | Irrigation Well | |
| Sinkhole/other karst feature | Sinkhole | |

CAFO

Farm Name: Aarons_Farm

Is this a CAFO: True

Map generated on: 1/23/2017 SnapMap Version: 16.0, Crop year: 2017



- DNR Wetland
- No Winter App. Slope > 6%
- CAFO SWQMA 300FT
- Bedrock depth < 5ft
- Channelized Flow 200ft Buffer
- Direct Conduit to GW 300ft
- Wetland 200ft Buffer
- Headland stacks
- Counties
- Township/Range
- Fields

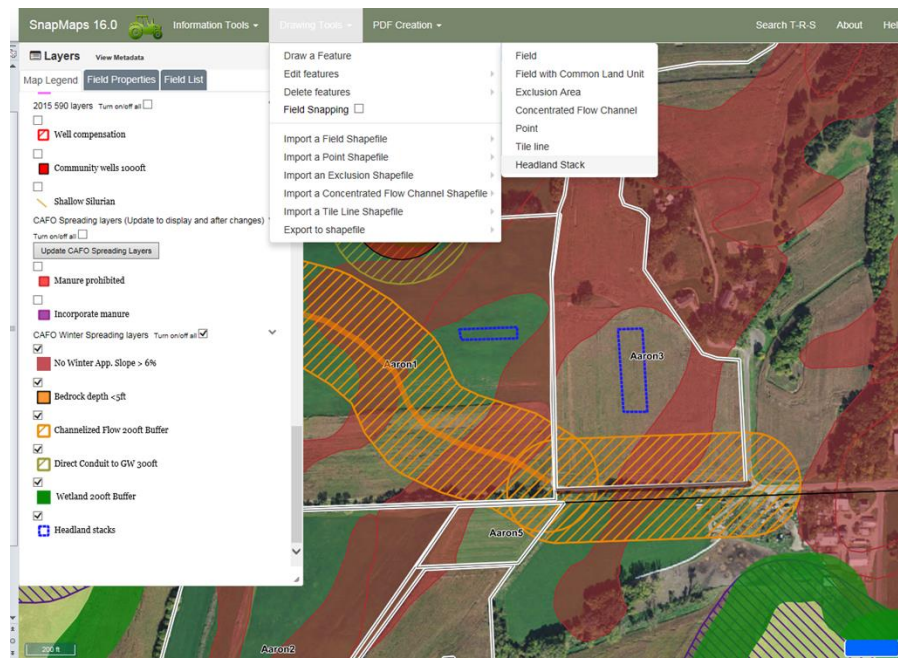
- Tile lines
- Not farmed
- Grass filter area
- Vegetated buffer
- Water
- Sinkhole/other karst feature
- Other
- Designed grassed waterway
- Permanent vegetated channel
- Unvegetated ephemeral channel
- Drainage ditch

- Gully
- Point buffers
- Drinking Well
- Well
- Irrigation Well
- Sinkhole
- Non-metallic mine
- Fractured bedrock at surface
- Other direct conduit
- Tile outlet
- Tile inlet

▲ County Defined Karst Features

CAFO SnapPlus Updates

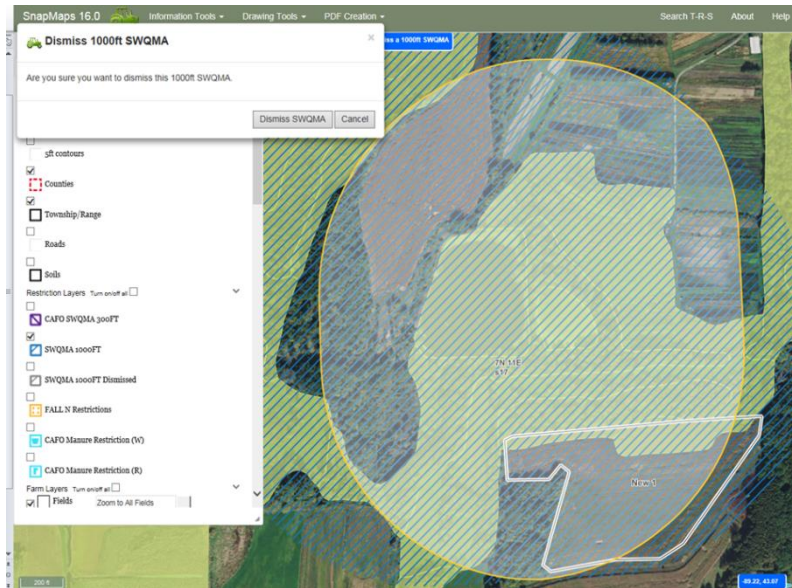
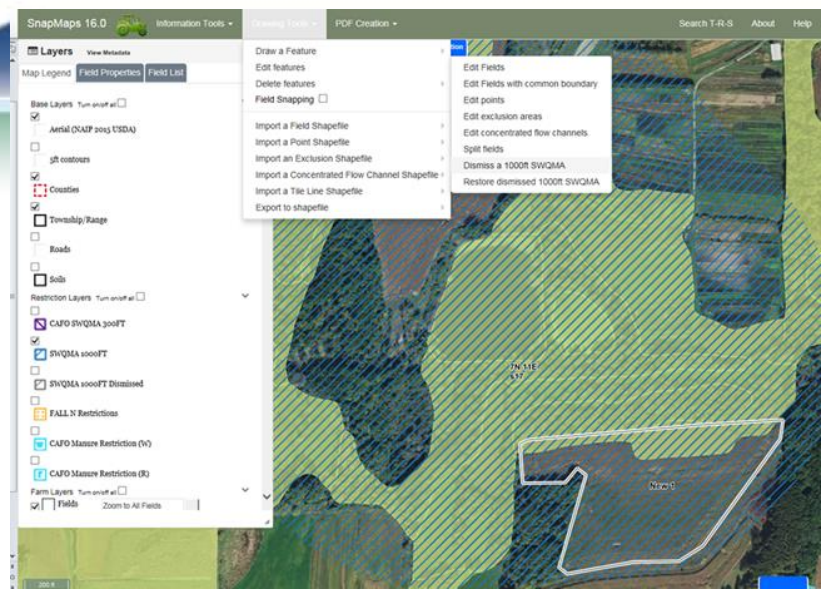
- Updates to SnapMaps:
 - Headland Stacking
 - New Polygon tool to draw headland stacking sites
 - No stack restrictions available on maps



CAFO SnapPlus Updates

- Updates to SnapMaps:
 - SWQMA Dismissal tool
 - Only on 1000ft SWQMA
 - Can delete/restore 1000ft SWQMA





QUESTIONS

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